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CLAIMS

1. A purified polypeptide selected from the group consisting of:

(a) non-human vertebrate Macrophage Derived Chemokine (MDC) polypeptides;

(b) fragments of said non-human vertebrate MDC polypeptides that retain at least one biological activity of the MDC polypeptide; and

(c) fragments of said non-human vertebrate MDC polypeptides that are capable of inhibiting at least one biological activity of the MDC polypeptide.

2. A purified polypeptide according to claim 1 that is a non-human vertebrate MDC polypeptide or fragment thereof that retains at least one biological activity of the vertebrate MDC polypeptide.

3. A purified polypeptide according to claim 1 that is a fragment of a non-human vertebrate MDC polypeptide, said fragment being capable of inhibiting at least one biological activity of the MDC polypeptide.

4. A purified polypeptide according to any of claims 1-3, selected from the group consisting of:

(a) a polypeptide comprising a sequence of amino acids identified by positions 1 to 68 of SEQ ID NO: 36;

(b) a polypeptide comprising a sequence of amino acids identified by positions 1 to 69 of SEQ ID NO: 38; and

(c) a polypeptide comprising a sequence of amino acids identified by positions 1 to 69 of SEQ ID NO: 46.

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5. A pharmaceutical composition comprising a purified polypeptide according to any one of claims 1-4 in a pharmaceutically acceptable carrier.

6. A purified polynucleotide comprising a nucleotide sequence that encodes a polypeptide according to any one of claims 1-4.

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7. A vector comprising a polynucleotide according to claim 6.

8. A host cell stably transformed or transfected with a polynucleotide according to claim 6, or with a vector comprising said polynucleotide, in a manner allowing the expression in said host cell of the polypeptide encoded by said polynucleotide.

9. A method for producing a polypeptide that is a non-human vertebrate MDC or MDC fragment or analog, said method comprising growing a host cell according to claim 8 in a nutrient medium and isolating the polypeptide from said cell or said medium.

10. An antibody that specifically binds to an MDC polypeptide, said antibody selected from the group consisting of antibody 252Y and antibody 252Z.

11. A hybridoma cell line that produces an antibody according to claim 10.

12. A kit for assaying for MDC polypeptides, said kit comprising, in association, two monoclonal antibodies that specifically bind MDC, wherein at least one of said monoclonal antibodies is a monoclonal antibody according to claim 10.

13. A method for identifying a modulator of binding between Macrophage Derived Chemokine (MDC) and and an MDC receptor, comprising the steps of:

a) contacting an MDC receptor composition and a vertebrate Macrophage Derived Chemokine (MDC) polypeptide or fragment or analog thereof that binds chemokine receptor CCR4, in the presence and in the absence of a putative modulator compound, wherein said receptor composition comprises cell membranes of cells recombinantly modified to express increased amounts of the chemokine receptor CCR4 ;

b) detecting binding between the receptor composition and the polypeptide; and

c) identifying a putative modulator compound in view of decreased or increased binding between the receptor composition and the polypeptide in the presence of the putative modulator, as compared to binding in the absence of the putative modulator.

14 . A method for identifying a modulator of binding between Macrophage Derived Chemokine (MDC) and an MDC receptor, comprising the steps of:

a) contacting an MDC receptor composition and a vertebrate Macrophage Derived Chemokine (MDC) polypeptide in the presence and in the absence of a putative modulator compound, wherein said receptor composition comprises eosinophil cell membranes;

b) detecting binding between the receptor composition and the polypeptide; and

c) identifying a putative modulator compound in view of decreased or increased binding between the receptor composition and the polypeptide in the presence of the putative modulator, as compared to binding in the absence of the putative modulator.

15. A method according to claim 13 or 14 wherein the polypeptide is a vertebrate MDC polypeptide.

16. A method according to claim any one of claims 13-15, wherein said contacting step comprises contacting said cell membranes with said polypeptide, and wherein said method further comprises steps of recovering said cell membranes after said contacting step; and washing said cell membranes prior to said detecting step to remove unbound polypeptide.

17. A method according to any one of claims 13-16 wherein said polypeptide comprises a detectable label, and wherein in step (b) binding between the receptor composition and the polypeptide is detected by detecting labeled polypeptide bound to the receptor composition.

18. A method according to any one of claims 13-16, wherein the receptor composition comprises a whole cell expressing an MDC receptor on its surface, and wherein, in step (b), binding between the receptor composition and the polypeptide is detected by measuring a binding-induced physiological change in said cell.

19. A method according claim 18 wherein the binding-induced physiological change is selected from the group consisting of:

(a) the conversion of GTP to GDP in said host cell; and

(b) a change in the concentration of cAMP in said host cell.

20. A purified compound that is a modulator of binding between the chemokine MDC and an MDC receptor, said compound identified by a method according to any of claims 13-19.

21. The use of an MDC antagonist or TARC antagonist compound for preparation of a medicament for inhibiting platelet aggregation in a mammalian subject.

22. The use of an MDC antagonist or TARC antagonist compound for preparation of a medicament for the treatment or palliation of lupus erythematosus in a mammalian subject.

23. The use of an MDC antagonist compound for preparation of a medicament for inhibiting MDC-induced activation, chemotaxis, or proliferation of cells that express the chemokine receptor CCR4.

24. The use of an MDC antagonist or TARC antagonist compound for preparation of a medicament for inhibiting an allergic reaction in a mammalian host.

25. The use of an MDC antagonist or TARC antagonist compound for preparation of a medicament for the treatment of asthma.

26. A method of palliating an allergic reaction in a mammalian subject, comprising the steps of:

identifying a mammalian subject in need of treatment for an allergic reaction that is characterized by eosinophil accumulation, and

administering to said mammalian subject a composition comprising an MDC antagonist compound or TARC antagonist compound in an amount effective to palliate the allergic reaction.

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27. A method of treating a disease state characterized by aggregation of platelets in a mammalian subject, comprising the steps of:

identifying a mammalian subject in need of treatment for said disease state, and

administering to said mammalian subject a composition comprising an MDC antagonist compound or TARC antagonist compound in an amount effective to prevent platelet aggregation in said mammalian subject.

28. A method of treating lupus erythematosus in a mammalian subject, comprising the steps of:

identifying a mammalian subject in need of treatment for lupus erythematosus, and

administering to said mammalian subject a composition comprising an MDC antagonist compound or TARC antagonist compound in an amount effective to treat lupus erythematosus or palliate its symptoms.

29. A method of treating a disease state characterized by activation, chemotaxis, or proliferation of cells that express the chemokine receptor CCR4 in a mammalian subject, comprising the steps of:

identifying a mammalian subject in need of treatment for said disease state, and

administering to said mammalian subject a composition comprising an MDC antagonist compound or TARC antagonist compound in an amount effective to prevent at least one of activation, chemotaxis, and proliferation of cells that express the chemokine receptor CCR4 in said mammalian subject.

30. A use according to any of claims 21-25 or a method according to any of claims 26-29 wherein the MDC antagonist compound is selected from the group consisting of:

(a) a polypeptide fragment or analog of a vertebrate MDC that inhibits MDC activation of an MDC receptor;

(b) an antibody that specifically binds a vertebrate MDC polypeptide;

(c) an MDC antagonist according to claim 20;

(d) a polypeptide capable of binding to a vertebrate MDC polypeptide and comprising an antigen-binding fragment of an anti-MDC antibody;

(e) a polypeptide comprising the C-C chemokine receptor 4 (CCR4) amino acid sequence set forth in SEQ ID NO: 34 or comprising a continuous fragment thereof that is capable of binding to MDC; and

(f) combinations of (a)-(e).

31. A use according to any of claims 21-25 or a method according to any of claims 26-29 wherein said MDC antagonist compound comprises an antibody substance that binds MDC, said antibody substance selected from the group consisting of monoclonal antibodies, polyclonal antibodies, single chain antibodies, chimeric, antibodies, and humanized antibodies.

32. In a vaccine composition, the improvement wherein a polypeptide is included in the vaccine composition, said polypeptide comprising a vertebrate MDC polypeptide or biologically active fragment or analog thereof.

33. A method of stimulating an immune response in a human or animal comprising the step of administering a vaccine composition according to claim 32 to a human or animal in an amount effective to stimulate an immune response in the human or animal.

34. A method of screening a patient suspected of suffering from, or undergoing treatment for, a disorder characterized by MDC-induced T_H2 cell migration or activation, comprising the steps of:

obtaining a fluid sample from a patient suspected of suffering from a disorder characterized by MDC-induced T_H2 cell migration or activation; and

determining the concentration of MDC in the fluid sample.

35. A method according to claim 34, wherein the fluid comprises serum, and wherein the MDC concentration is determined via ELISA assay.

36. A method according to claim 34, wherein the patient is suspected of suffering from the disease state, and wherein an elevated MDC concentration is considered diagnostic of the disease state.

37. A method according to claim 34, wherein the patient is undergoing treatment for the disease state, and MDC concentration in the fluid sample is used to monitor dosing or efficacy of treatment.

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